CCD-TR57/TR67/TR87/TR413PK/TR414PK/ TR917/TR940/TR940PK

RMT-708

SERVICE MANUAL

US Model

CCD-TR67/TR87/TR917/TR940

Canadian Model

CCD-TR57/TR67/TR87/TR917/TR940

E Model

CCD-TR413PK/TR414PK/TR940PK

Self Diagnostics Supported model

Handycam Vision™

Video 8 XR

video Hi8 XR

B MECHANISM

Photo : CCD-TR940
: RMT-708

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII**" (9-973-801-11).**

SPECIFICATIONS

Video camera recorder

System

Video recording system
CCD-TR917/TR940/TR940PK : 4 rotary heads (SP/LP independent heads)
CCD-TR57/TR67/TR87/TR413PK/ TR414PK : 2 Rotary heads
Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
NTSC color, EIA standards

Usable cassette
8mm video format cassette
CCD-TR57/TR67/TR87/TR413PK/ TR414PK : standard 8
CCD-TR917/TR940/TR940PK : Hi8 or standard 8

Recording / Playback time (using 120 min. cassette)
SP mode: 2 hours
LP mode: 4 hours

Fastforward/rewind time (using 120 min. cassette)
Approx. 5 min.

Image device
CCD (Charge Coupled Device)

Viewfinder
Electronic viewfinder
Color 113,578 (521 x 218)

Lens
Combined power zoom lens
Filter diameter 1 7/16 in. (37 mm)
CCD-TR57 : 16 x (Optical), 32 x (Digital)
CCD-TR67/TR87 : 16 x (Optical), 64 x (Digital)
CCD-TR413PK/TR414PK : 16 x (Optical), 200 x (Digital)
CCD-TR917/TR940 : 18 x (Optical), 72 x (Digital)
CCD-TR940PK : 18 x (Optical), 220 x (Digital)

Focal distance
CCD-TR57/TR67/TR87/TR413PK/ TR414PK : 3/16 - 2 5/8 in. (4.1 - 65.6 mm)
CCD-TR917/TR940/TR940PK : 3/16 - 8 in. (4.1 - 73.8 mm)
When converted to a 35 mm still camera
CCD-TR57/TR67/TR413PK : 1 9/16 - 24 7/8 in. (39.4 - 630 mm)
CCD-TR87/TR414PK : 1 7/8 - 29 3/4 in. (47.2 - 755 mm)
CCD-TR917/TR940/TR940PK : 1 7/8 - 33 1/2 in. (47.2 - 850 mm)

Color temperature
Auto

Minimum illumination*
CCD-TR57/TR67 : 0.4 lux (F 1.4)
CCD-TR413PK : 0.4 lux (F 1.4)(Visible minimum low light 0.2 lux)
CCD-TR87/TR414PK/TR917/TR940/ TR940PK : 0.7 lux (F 1.4)
CCD-TR917/TR940/TR940PK : 0 lux (in NightShot mode)**

* Minimum illumination expresses the light level a camcorder requines to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.

**Object invisible for the dark can be shot with infrared lighting.

Illumination range
CCD-TR57/TR67/TR413PK : 0.4 lux to 100,000 lux
CCD-TR87/TR414PK/TR917/TR940/ TR940PK : 0.7 lux to 100,000 lux

Recommended illumination
More than 100 lux

Input and output connectors

S video input/output(CCD-TR917/ TR940/TR940PK only)
4-pin mini DIN
Luminance signal : 1 Vp-p, 75 ohms, unbalanced
Chrominance signal : 0.286 Vp-p, 75 ohms, unbalanced

Video input(CCD-TR917/TR940/ TR940PK only)/output
Phono jack : 1 Vp-p, 75 ohms, unbalanced

Audio input(CCD-TR917/TR940/ TR940PK only)/output
CCD-TR57/TR67/TR87/TR413PK/ TR414PK : Monaural, Phone jack, 327 mV
CCD-TR917/TR940/TR940PK : Phono jacks (2: stereo L and R)
327 mV, (at output impedance 47 kilohms) impedance less than 2.2 kilohms

RFU DC OUT
Special minijack, DC 5V

Headphone jack(CCD-TR917/ TR940/TR940PK only)
Stereo minijack (ø 3.5 mm)

LANC control jack
Stereo minijack (ø 2.5 mm)

MIC jack
Minijack, 0.388mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm)
CCD-TR57/TR67/TR87/TR413PK/ TR414PK : Monaural type
CCD-TR917/TR940/TR940PK : Stereo type

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)

Average power consumption (when using the battery pack)
During camera recording
CCD-TR57/TR67/TR413PK : 2.4 W
CCD-TR87/TR414PK : 2.5 W
CCD-TR917/TR940/TR940PK : 2.6 W

Operating temperature
32°F to 104°F(0°C to 40°C)

Storage temperature
-4°F to +140°F(-20°C to +60°C)

Dimensions (Approx.)
4 1/4 x 4 1/4 x 7 5/8 in.
(107 x 107 x 193 mm)(w/h/d)

— Continued on next page —

8 VIDEO CAMERA RECORDER

CCD-TR57/TR67/TR87/TR413PK/TR414PK

Hi8 VIDEO CAMERA RECORDER

CCD-TR917/TR940/TR940PK

MICROFILM

SONY®

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

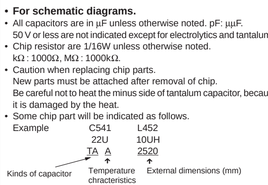
- **For printed wiring boards.**
  - ▨: Pattern from the side which enable seeing. (The other layer's patterns are not indicated.)
  - Circled numbers refer to waveforms.
  - Through hole is omitted.
  - There are few cases that the part printed on diagram isn't mounted in this model.
  - Chip parts.

Transistor

Diode

- **For schematic diagrams.**
  - All capacitors are in μF unless otherwise noted. pF: μμF. 50 V or less are not indicated except for electrolytics and tantalums.
  - Chip resistor are 1/16W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ.
  - Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
  - Some chip part will be indicated as follows.

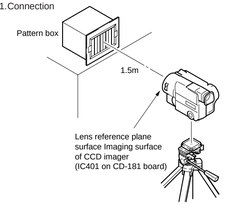
Example



  - Constants of resistors, capasitors, ICs and etc with XX indicate tha they are not used. In such cases, the unused circuits may be indicated.
  - Parts with ☆ differ according to the model/destination. Refer to the mount table for each function.
  - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
  - Signal name
    XEDIT → $\overline{\text{EDIT}}$ PB/XREC → $\overline{\text{PB/REC}}$
  - ⏦: non flammable resistor.
  - ⏦: fusible resistor.
  - ▭: panel designation.
  - ▬▬: B+ Line
  - ▬ ▬ ▬: B– Line
  - ⇨: IN/OUT direction of (+, –) B LINE.
  - ▭: adjustment for repair.
  - Circled numbers refer to waveforms.

- **Measuring conditions voltage value and waveform.**
  - The object is color bar chart of pattern box.
  - Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
  - Voltages variations may be noted due to normal production tolerances.

1.Connection



2.Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

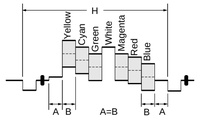


Fig. a (Video output terminal output waveform)

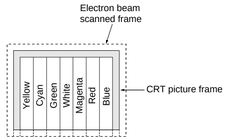


Fig. b (Picture on monitor TV)

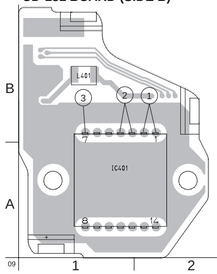
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

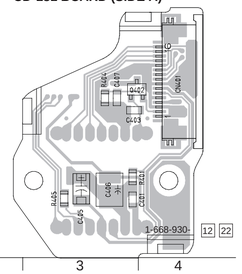
CD-181 (CCD IMAGER) PRINTED WIRING BOARD

– Ref No. CD-181 BOARD: 3,000 series –

CD-181 BOARD (SIDE B)



CD-181 BOARD (SIDE A)



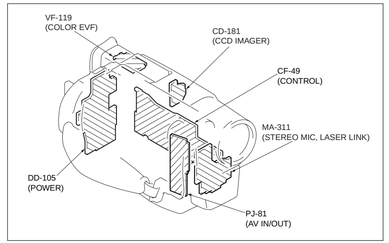
CD-181 BOARD

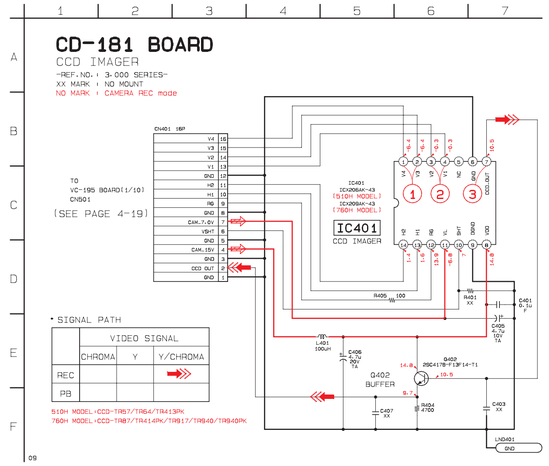
C401	A-3
C403	B-3
C405	A-3
C406	A-3
C407	B-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	B-3
R401	A-3
R404	B-3
R405	A-3

- **For Printed Wiring Boards.**

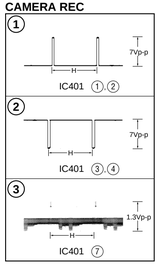
There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor





CD-181 BOARD
CAMERA REC



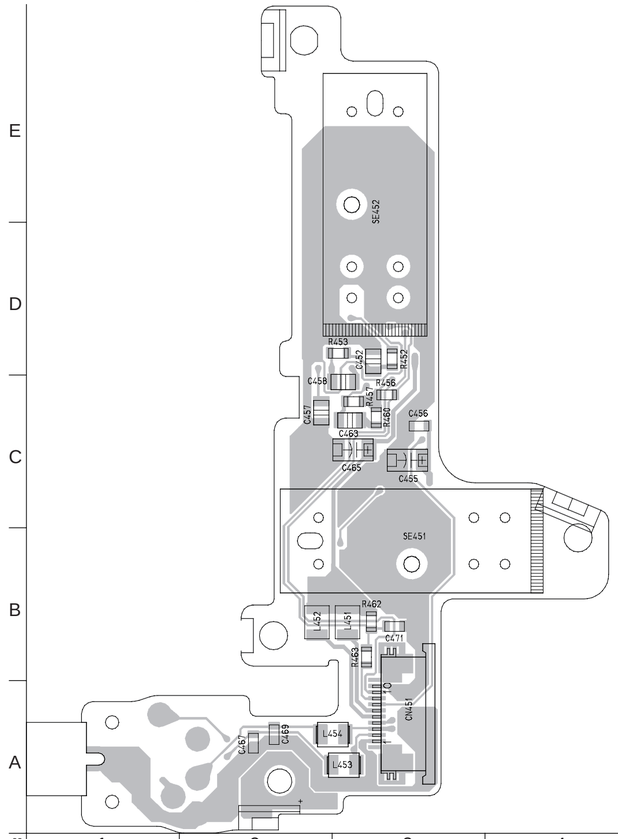
Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-181 board supplied as the repair parts. When replacing the CD-181 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure. Also, prevent the receiving light section from dust attached and strong light.

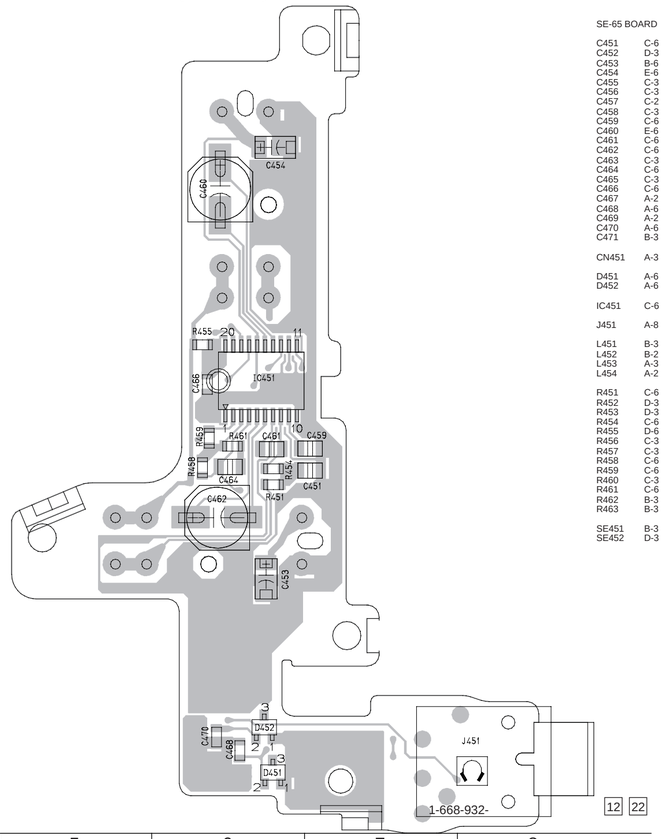
SE-65 (STEADY SHOT) PRINTED WIRING BOARD

– Ref No. SE-65 BOARD: 3,000 series –

SE-65 BOARD (SIDE B)



SE-65 BOARD (SIDE A)



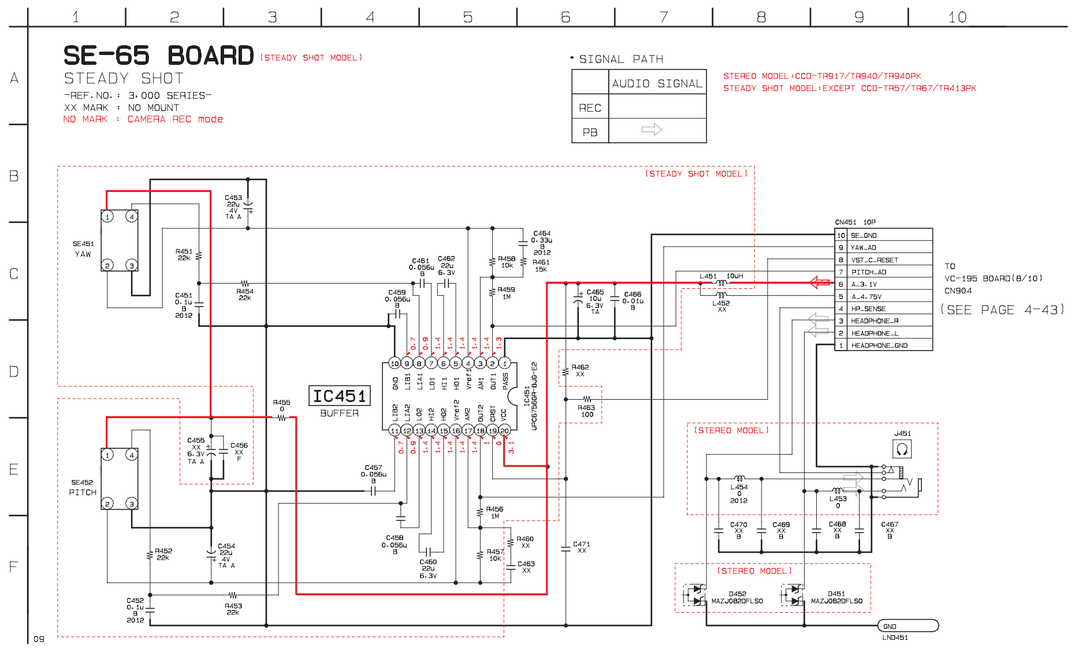
SE-65 BOARD

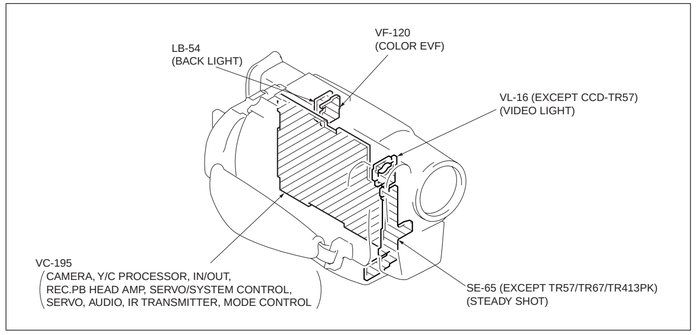
C451	C-6
C452	D-3
C453	B-6
C454	E-6
C455	C-3
C456	C-3
C457	C-2
C458	C-3
C459	C-6
C460	E-6
C461	C-6
C462	C-6
C463	C-3
C464	C-6
C465	C-3
C466	C-6
C467	A-2
C468	A-6
C469	A-2
C470	A-6
C471	B-3
CN451	A-3
D451	A-6
D452	A-6
IC451	C-6
J451	A-8
L451	B-3
L452	B-2
L453	A-3
L454	A-2
R451	C-6
R452	D-3
R453	D-3
R454	C-6
R455	D-6
R456	C-3
R457	C-3
R458	C-6
R459	C-6
R460	C-3
R461	C-6
R462	B-3
R463	B-3
SE451	B-3
SE452	D-3

• **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip diode





- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (1/10)

1 CAMERA REC — 2.3Vp-p — 28.636 MHz — IC501 (5)

2 CAMERA REC — 2.3Vp-p — 14.32 MHz — IC501 (11),(12)

3 CAMERA REC — 7Vp-p — H — IC501 (25),(26)

4 CAMERA REC — 7Vp-p — H — IC501 (28),(31)

5 CAMERA REC — 3Vp-p — H — IC501 (44)

6 CAMERA REC — 3Vp-p — V — IC501 (45)

7 CAMERA REC — 3.2Vp-p — 0.14usec — IC502 (2)—(10)

8 CAMERA REC — 1.3Vp-p — H — IC502 (26)

9 PB — 0.4Vp-p — H — IC502 (36)

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

VC-195 BOARD(1/10)

CAMERA1(CH BLOCK)

-REF.NO. : 1.000 SERIES-

XX MARK : NO MOUNT

B C D E F G H I J K

HS601

HS601

TO CD-181 BOARD CN401

(SEE PAGE 4-)

IC501
TIMING GENERATOR

HS601

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB			

IC502
S/H, AGC
A/D CONVERTER

L502
22uH
0

Q501
Y GCA

09

1 TO VC-195 BOARD(7/10)

2 TO VC-195 BOARD(3/10)

3 TO VC-195 BOARD(10/10)

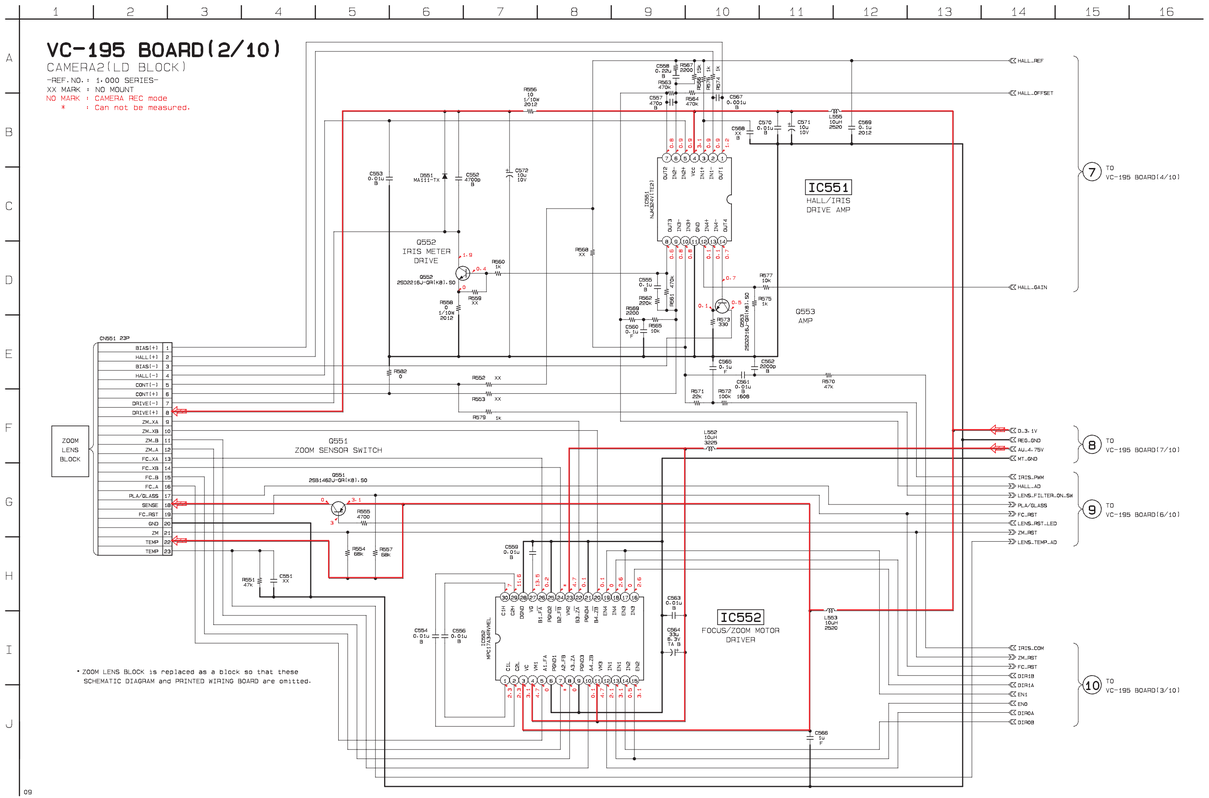
5 TO VC-195 BOARD(6/10)

4 TO VC-195 BOARD(5/10)

47 TO VC-195 BOARD(4/10)

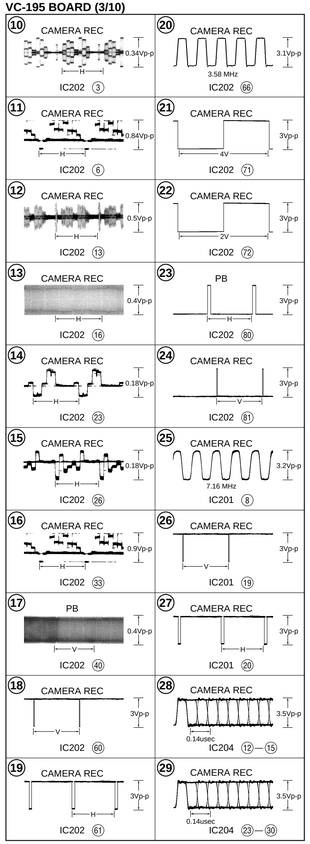
6 TO VC-195 BOARD(4/10)

• **For schematic diagrams.**
• Refer to page 4–13 for Printed Wiring Board.



- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

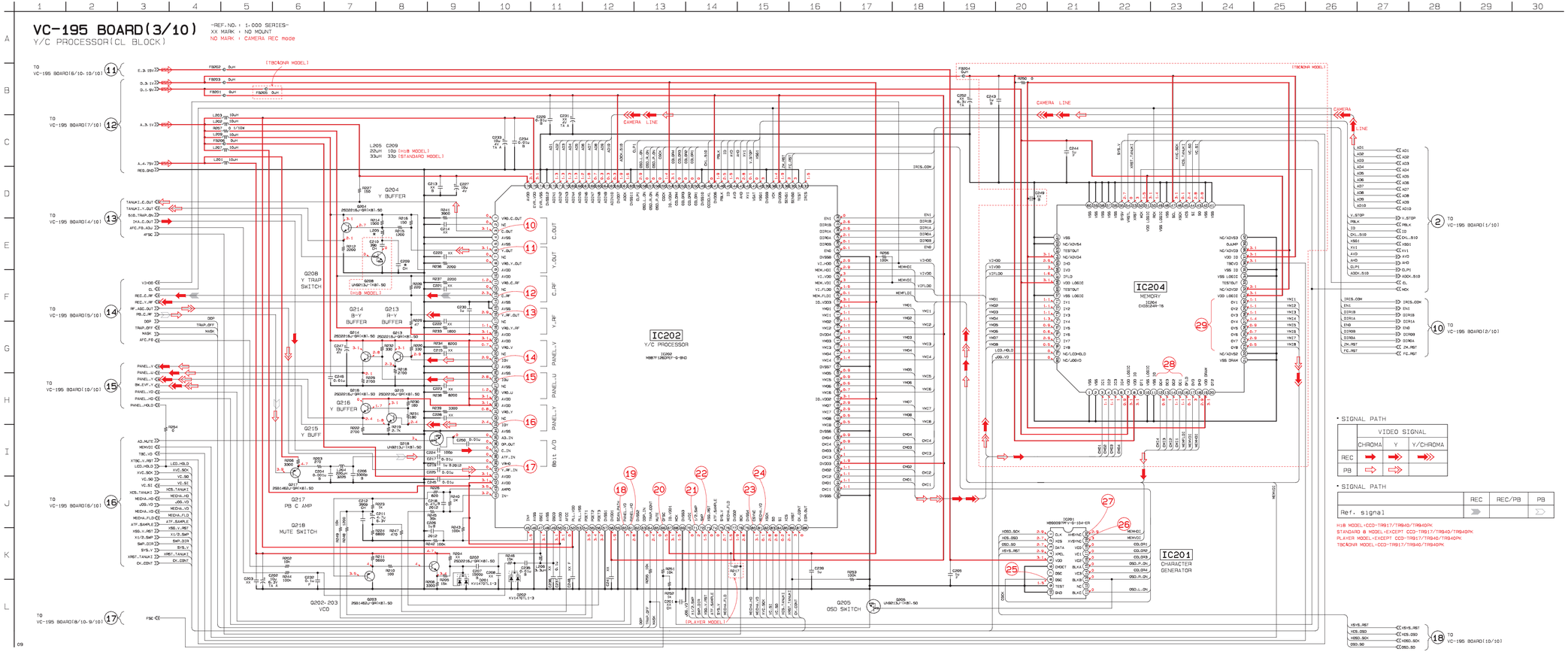
VC-195 BOARD (3/10)


10 CAMERA REC 0.34Vp-p IC202 3
20 CAMERA REC 3.1Vp-p 3.58 MHz IC202 66
11 CAMERA REC 0.84Vp-p IC202 6
21 CAMERA REC 3Vp-p 4V IC202 71
12 CAMERA REC 0.5Vp-p IC202 13
22 CAMERA REC 3Vp-p 2V IC202 72
13 CAMERA REC 0.4Vp-p IC202 16
23 PB 3Vp-p IC202 80
14 CAMERA REC 0.18Vp-p IC202 23
24 CAMERA REC 3Vp-p IC202 81
15 CAMERA REC 0.18Vp-p IC202 26
25 CAMERA REC 3.2Vp-p 7.16 MHz IC201 8
16 CAMERA REC 0.9Vp-p IC202 33
26 CAMERA REC 3Vp-p IC201 19
17 PB 0.4Vp-p IC202 40
27 CAMERA REC 3Vp-p IC201 20
18 CAMERA REC 3Vp-p IC202 60
28 CAMERA REC 3.5Vp-p 0.14usec IC204 12—15
19 CAMERA REC 3Vp-p IC202 61
29 CAMERA REC 3.5Vp-p 0.14usec IC204 23—30

VC-195 BOARD(3/10)

Y/C PROCESSOR(CL BLOCK)

-REF.NO.: 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode



• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→	→	→
PB	⇨	⇨	

• SIGNAL PATH

Ref. signal	REC	REC/PB	PB
	→		⇨

H1B MODEL:<CCD-TR917/TR940/TR940PK
STANDARD MODEL:EXCEPT CCD-TR917/TR940/TR940PK
PLAYER MODEL:EXCEPT CCD-TR917/TR940/TR940PK
TBC&DNR MODEL:CCD-TR917/TR940/TR940PK

• **For schematic diagrams.**
• Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD(4/10)

IN/OUT(IO BLOCK)

-REF.NO. : 1-000 SERIES-
XX MARK : NO MOUNT

NO MARK : CAMERA REC mode
* : Can not be measured.

[VTR REC MODEL]

[STANDARD 8 MODEL]

[IR TRANSMITTER MODEL]

[H18 MODEL]

IC151
SIGNAL SELECTOR

IC152
D/A CONVERTER(EVR)

Q151
V ON SWITCH

Q154, 156
VIDEO MUTE

Q153
VIDEO MUTE

TO VC-195 BOARD(3/10) 13
TO VC-195 BOARD(1/10) 47
TO PJ-81 BOARD CN101 (SEE PAGE 4-70)
TO VC-195 BOARD(8/10) 19
TO VC-195 BOARD(10/10) 20
TO VC-195 BOARD(6/10) 21
TO VC-195 BOARD(7/10) 22
TO VC-195 BOARD(5/10) 23
TO VC-195 BOARD(7/10) 24
TO VC-195 BOARD(9/10) 25
TO VC-195 BOARD(2/10) 7
TO VC-195 BOARD(1/10) 6
TO VC-195 BOARD(8/10) 25

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

★ MARKED•MOUNT TABLE

Mode Ref.NO.	H18	STANDERD 8
C168	1u	0.22u
C184	1u	0.01u
IC151	CXA2030R-T6	AN3220FH-EB

H18 MODEL•CCD-TR917/TR940/TR940PK
VTR REC MODEL•CCD-TRV917/TRV940/TRV940PK
IR TRANSMITTER MODEL•CCD-TR87/TR414PK/TR917/TR940/TR940PK

09

VC-195 BOARD (4/10)
CAMERA REC

30 — 0.66Vp-p — IC151 ③
31 — 0.32Vp-p — IC151 ⑤
32 — 1.4Vp-p — IC151 ⑰ ⑭
33 — 1.8Vp-p — IC151 ㉕ ㊵
34 — IC151 ㉙ (2.1Vp-p) IC151 ㉜ (1.6Vp-p)

- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (5/10)

35 CAMERA REC — 0.3Vp-p — IC001 (3)

36 CAMERA REC — 0.3Vp-p — IC001 (5) TRIG : IC001 (21)

37 PB — 0.4Vp-p — IC001 (7)

38 PB — 0.4Vp-p — IC001 (11)

39 PB — 0.4Vp-p — IC001 (17)

40 CAMERA REC — 2.9Vp-p — IC001 (21)

41 CAMERA REC — 3Vp-p — IC001 (44), (48)

42 CAMERA REC — 0.18Vp-p — IC001 (61)

43 CAMERA REC — 3Vp-p — IC001 (62)

45 CAMERA REC — 7Vp-p — 4.12 MHz — Q001 (c)

VC-195 BOARD(5/10)

REC/PB HEAD AMP(RR BLOCK)

-REF.NO. : 1-000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC/PB mode
R : CAMERA REC mode
P : PB mode

IC001 VIDEO HEAD REC/PB AMP

Q017 PB RF AMP

Q019 AGC SLOW SWITCH

Q020 BUFFER

Q021-023 FILTER

Q024 REC Y AMP AMP

Q025-026 FILTER SWITCH

Q027 TRAP SWITCH

Q028-029 MP/ME SWITCH

Q030 FILTER

Q033 FILTER

Q034-036 FILTER SWITCH

Q038 SWITCH

Q039 RF AGC AMP

Q040 SWITCH

Q041 PB 4.75V SWITCH

Q042 REC/PB SWITCH

Q043 SWITCH

Q044 ME/VE SWITCH

Q022 REC C AMP

Q032 RF AGC OFF SWITCH

Q007, 009 REC/PB LP1 HEAD SWITCH

Q005-010 REC/PB SP1 HEAD SWITCH

Q006-011 REC/PB SP2 HEAD SWITCH

Q004-008 REC/PB LP2 HEAD SWITCH

Q002 ERASE CURRENT SWITCH

Q001-003 ERASE HEAD OSC

Q012 ERASE HEAD ON SWITCH

DC701 XX

CPC (FOR CHECK)

TO VC-195 BOARD(6/10)

TO VC-195 BOARD(4/10)

TO VC-195 BOARD(1/10)

TO VC-195 BOARD(3/10)

TO VC-195 BOARD(8/10)

TO VC-195 BOARD(7/10)

TO VC-195 BOARD(10/10) NON CONNECT

TO VC-195 BOARD(10/10)

TO VC-195 BOARD(7/10)

5 HEAD MODEL:CCD-TR917/TR940/TR940PK
3 HEAD MODEL:EXCEPT CCD-TR917/TR940/TR940PK
H1B MODEL:CCD-TR917/TR940/TR940PK
STANDARD B MODEL:EXCEPT CCD-TR917/TR940/TR940K

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→	→
PB	⇨	⇨	⇨	⇨

• SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		→	
Ref. signal	→		⇨

★MARKED=MOUNT TABLE

Mode / Ref.No.	H1B	STANDARD B
C075	3300	470p
C080	10p	27p
C083	82p	68p
C088	270p	68p
R066	680	560
R077	680	0
R063	470	560
R064	3900	0
R105	680	270

• **For schematic diagrams.**
• Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD(6/10)

SERVO/SYSTEM CONTROL
(MC BLOCK)

-REF.NO. : 1.000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.

TO VC-195 BOARD(8/10) 34
TO VC-195 BOARD(4/10) 21
TO VC-195 BOARD(5/10) 27
TO VC-195 BOARD(3/10) 16
TO VC-195 BOARD(1/10) 5
TO VC-195 BOARD(2/10) 9

• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		➤	
Drum phase servo		➤	
Drum servo(speed and phase)		➤	
Capstan speed servo		➤	
Capstan servo(speed and phase)		➤»	

IC402
SERVO/SYSTEM CONTROL
M99119|RFV-G-106-ER

IC401
EEP ROM

TO VC-195 BOARD(7/10) 33
TO VC-195 BOARD(7/10) 35
TO VC-195 BOARD(10/10) 36
TO VC-195 BOARD(8/10) 37
TO VC-195 BOARD(3/10・10/10) 11

★MARKED•MOUNT TABLE

Model / Ref.No.	TYPE B	TYPE D	TYPE E
R919	22k	56k	68k
R920	100k	68k	56k

TYPE B MODEL•CCD-TR917/TR940/TR940PK
TYPE D MODEL•CCD-TR87/TR414PK
TYPE E MODEL•CCD-TR57/TR67/TR413PK

CN907 16P
16 SYS.V
15 XCS.STAR
14 XVC.SCK
13 VC.SO
12 VC.SI
11 N.C.
10 N.C.
9 MT.GND
8 CAM.DD.ON
7 MT.-4.75V
6 YAW.PWM
5 PITCH.PWM
4 REG.GND
3 REG.GND
2 F.BUSY
1 YAW.POSITION.AD
OPEN

VC-195 BOARD (6/10)
CAMERA REC

46 1.7Vp-p 20 MHz IC402 (1)
47 3Vp-p 2V IC402 (47)
48 3Vp-p 4V IC402 (48)
49 3Vp-p 2V IC402 (55), (57)
50 3Vp-p 13usec IC402 (68)
51 3Vp-p 13usec IC402 (69)
52 3Vp-p 13usec IC402 (70)
53 3Vp-p 1.2msec IC402 (115)
54 3Vp-p 2.8msec IC402 (116)
55 3Vp-p 2V IC402 (117)

• **For schematic diagrams.** • Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD(7/10)

SERVO(SB BLOCK)

-REF.NO. : 1.000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.

• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶	
Drum servo(speed and phase)		▶	
Capstan speed servo		▶	
Capstan servo(speed and phase)		▶▶	

IR TRANSMITTER MODEL:CCD-TR87/TR414PK/TR917/TR940/TR940PK

MECHA DECK

FP-220 (FLEXIBLE)

FP-248 (FLEXIBLE)

FP-356 (FLEXIBLE)

FP-249 (FLEXIBLE)

FP-355 (FLEXIBLE)

FP-221 (FLEXIBLE)

IC451
DRUM MOTOR DRIVER
DRUM PG/FG WAVEFORM SHAPER

IC452
LOADING
MOTOR DRIVE
SENSOR AMP

Q454.455
CAPSTAN ERROR AMP

Q452.453
DRUM MOTOR ON SWITCH

Q456
TAPE LED ON/OFF SWITCH

TO VC-195 BOARD(5/10) 31
TO VC-195 BOARD(6/10) 33
TO VC-195 BOARD(4/10) 24
TO VC-195 BOARD(10/10) 38
TO VC-195 BOARD(7/10) 42
TO VC-195 BOARD(10/10) 41
TO VC-195 BOARD(9/10) 40
TO VC-195 BOARD(8/10) 39
TO VC-195 BOARD(1/10) 1
TO VC-195 BOARD(2/10) 8
TO VC-195 BOARD(3/10) 12
TO VC-195 BOARD(4/10) 22
TO VC-195 BOARD(5/10) 29
TO VC-195 BOARD(6/10) 35

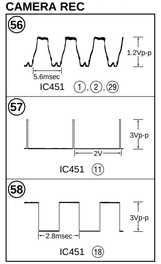
(IR TRANSMITTER MODEL)

TO DD-105 BOARD CN931 (SEE PAGE 4-85)

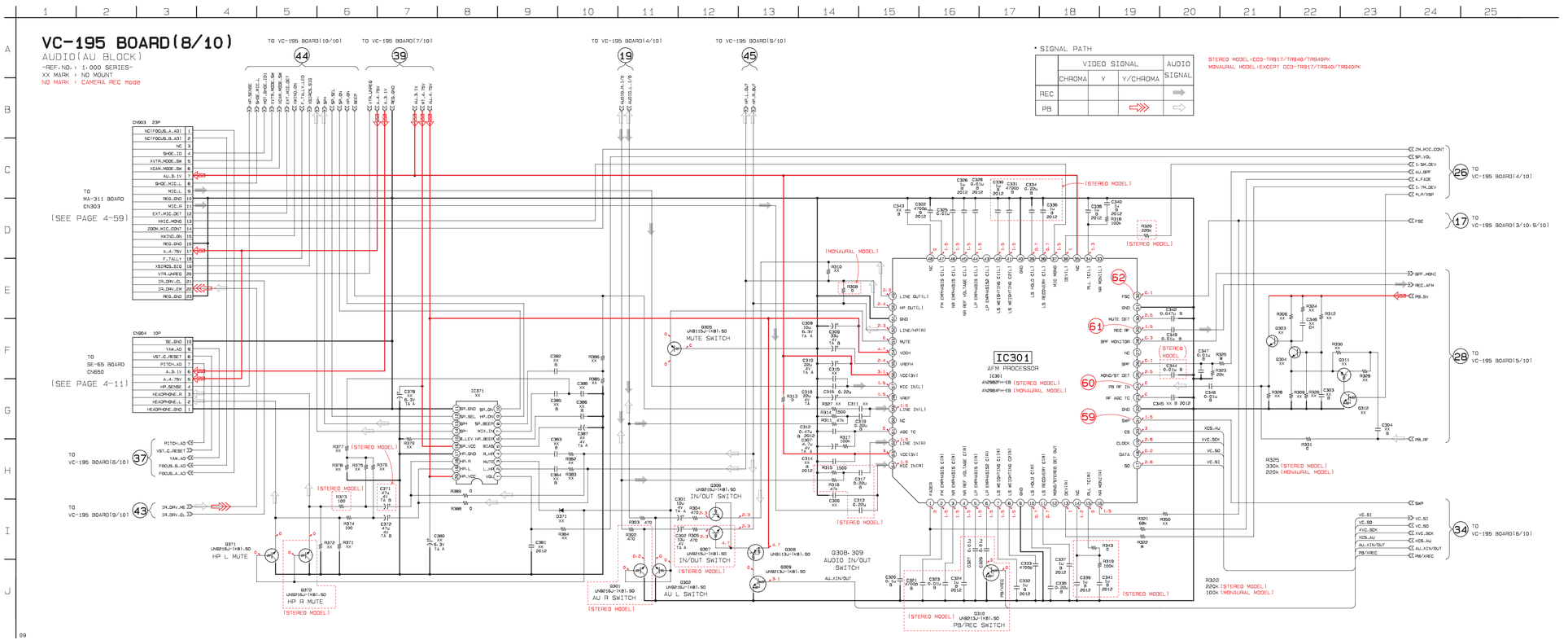
CN914 48P

1	SHOE_GND
2	SHOE_GND
3	SHOE_GND
4	SHOE_UNREG
5	SHOE_UNREG
6	SHOE_UNREG
7	EVF_BL_4.75V
8	BATT/VEXT
9	FAST_CHARGE
10	DC_PACK_SW
11	INIT_CHARGE_ON
12	VTR_UNREG
13	EVF_4.75V
14	CAM_15V
15	EVF_BL_GND
16	VTR_DD_ON
17	CAM_DD_ON
18	EVF_13.5V
19	BATT_UNREG
20	EVF_DD_ON
21	CAM_-7.0V
22	LCD_DD_ON
23	BL_CONT
24	MT_4.75V
25	D_1.9V
26	D_1.9V
27	A_3.1V
28	A_3.1V
29	AU_4.75V
30	D_3.1V
31	A_4.75V
32	A_4.75V
33	AU_3.1V
34	AU_4.75V
35	REP_4.75V
36	REG_GND
37	REG_GND
38	REG_GND
39	REG_GND
40	MT_GND
41	MT_GND
42	MT_GND
43	DRUM_ERROR
44	CAP_ERROR
45	CAP_VS
46	CAP_VS
47	DRUM_VS
48	DRUM_VS

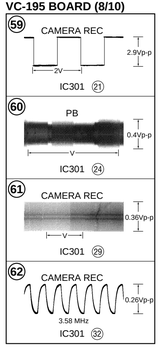
VC-195 BOARD (7/10)
CAMERA REC



- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

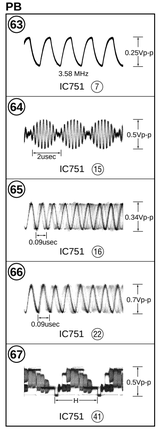


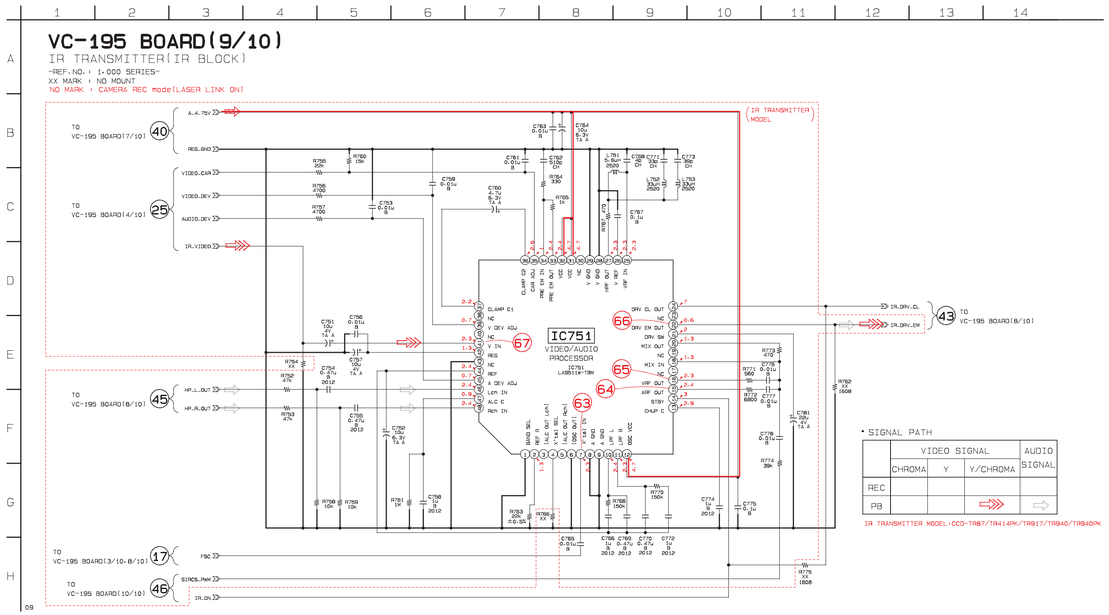
VC-195 BOARD (8/10)



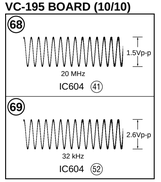
- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (9/10)
PB





VC-195 BOARD (10/10)



• **For schematic diagrams.**
• Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD(10/10)

MODE CONTROL(HI BLOCK)

-REF.NO.: 1.000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

IC602 INITIAL RESET BACKUP VCC

IC603 LANC IN/OUT

IC604 MODE CONTROL

Q607 BATTERY CHARGE DETECTOR

Q609 BUFFER

Q610 SWITCH

Q611 SWITCH

Q619 SWITCH

Q620 LANC ON SWITCH

TO VC-195 BOARD(1/10) 3
TO VC-195 BOARD(3/10) 18
TO VC-195 BOARD(4/10) 20
TO VC-195 BOARD(7/10) 42
TO VC-195 BOARD(5/10) 32
TO VC-195 BOARD(3/10.6/10) 11
TO VC-195 BOARD(6/10) 36
TO VC-195 BOARD(9/10) 46
TO VC-195 BOARD(7/10) 38
TO VC-195 BOARD(7/10) 41
TO VC-195 BOARD(8/10) 44
TO VC-195 BOARD(5/10) 30
TO VC-195 BOARD(3/10) 15

TO CF-49 BOARD CN001 (SEE PAGE 4-65)

TO DD-105 BOARD CN932 (SEE PAGE 4-88)

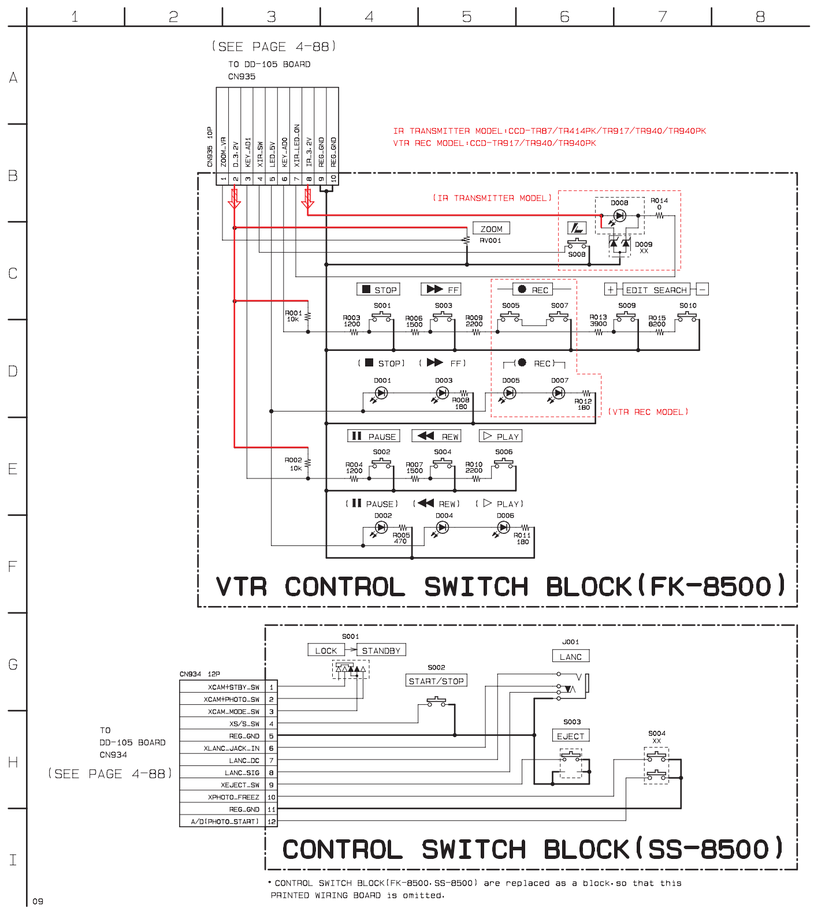
[VIDEO LIGHT MODEL] TO VL-16 BOARD CN151 (SEE PAGE 4-59)

[IR TRANSMITTER MODEL]
[MONAURAL MODEL]
[STEREO MODEL]

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		⇨
PB	⇨	⇨		⇨

STEREO MODEL:CCD-TR917/TR940/TR940PK
MONAURAL MODEL:EXCEPT CCD-TR917/TR940/TR940PK
IR TRANSMITTER MODEL:CCD-TR87/TR414PK/TR917/TR940/TR940PK
VIDEO LIGHT MODEL:EXCEPT CCD-TR87



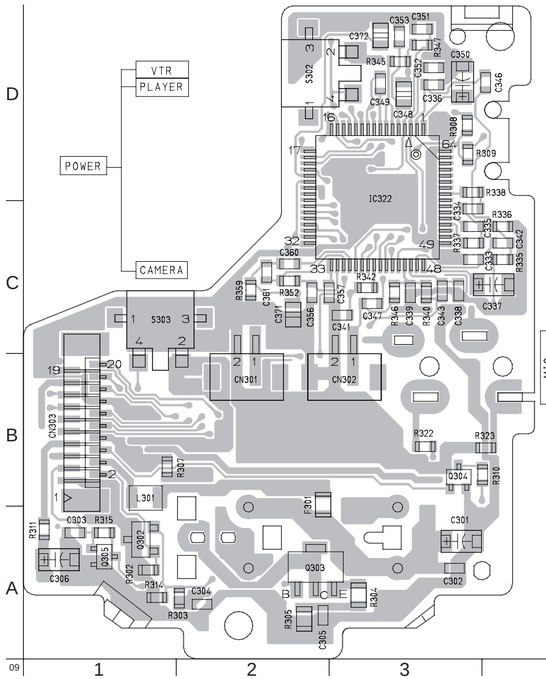
• CONTROL SWITCH BLOCK(FK-8500,SS-8500) are replaced as a block,so that this PRINTED WIRING BOARD is omitted.

CONTROL SWITCH BLOCK, STEREO MIC, LASER LINK
FK-8500, SS-8500 MA-311

MA-311 (STEREO MIC, LASER LINK) PRINTED WIRING BOARDS

– Ref No. MA-311 BOARD: 3,000 series –

MA-311 BOARD (SIDE B)



MA-311 BOARD (SIDE A)

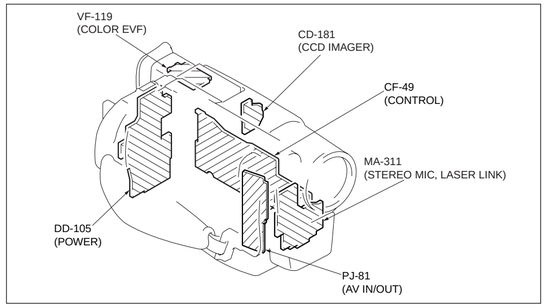
MA-311 BOARD

C301	A-3	C344	B-5	C373	D-5	Q301	A-5	R327	B-5	R356	D-6
C302	A-3	C345	C-5	C374	B-6	Q302	A-1	R328	B-5	R357	D-6
C303	A-1	C346	D-4	C375	D-5	Q303	A-2	R329	B-5	R358	D-5
C304	A-2	C347	C-3	C376	B-7	Q304	B-3	R330	B-6	R359	C-2
C305	A-2	C348	D-3	C377	B-6	Q305	A-1	R331	B-6	R360	C-6
C306	A-1	C349	D-3	C378	C-6	Q321	B-5	R332	B-6	R361	D-5
C321	B-5	C350	D-3			Q322	B-6	R333	B-6	R362	D-6
C322	B-5	C351	D-3	CN301	B-2			R334	B-6	R363	D-5
C323	B-5	C352	D-3	CN302	B-3	R301	A-5	R335	C-4	R364	D-5
C324	B-6	C353	D-3	CN303	B-1	R302	A-1	R336	C-4	R365	C-5
C325	B-6	C354	D-5			R303	A-2	R337	C-3	R366	C-5
C326	B-6	C355	D-5	D301	A-6	R304	A-3	R338	C-3	R367	C-5
C327	B-5	C356	C-2	D302	A-6	R305	A-2	R339	C-5	R368	D-5
C328	B-6	C357	C-2	D303	B-5	R306	B-7	R340	C-3		
C329	B-6	C358	D-5	D305	B-7	R307	B-1	R341	C-5	S301	D-4
C330	C-7	C359	C-5	D307	D-5	R308	D-3	R342	C-3	S302	D-2
C331	B-6	C360	C-2	D308	B-7	R309	D-3	R343	C-5	S303	C-1
C332	B-6	C361	C-2	D309	A-5	R310	B-3	R344	C-5		
C333	C-3	C362	D-5	D322	B-5	R311	A-1	R345	D-3		
C334	C-3	C363	D-6	D323	B-6	R312	B-5	R346	C-3		
C335	C-3	C364	D-6			R313	B-5	R347	D-3		
C336	D-3	C365	D-5	IC301	A-7	R314	A-1	R348	D-5		
C337	C-4	C366	D-5	IC321	C-6	R315	A-1	R349	D-5		
C338	C-3	C367	D-6	IC322	D-3	R321	C-5	R350	D-5		
C339	C-3	C368	D-6			R322	B-3	R351	D-5		
C340	C-5	C369	C-6	J310	B-5	R323	A-4	R352	C-2		
C341	C-3	C370	D-6			R324	C-5	R353	D-5		
C342	C-4	C371	C-2	L301	B-1	R325	B-5	R354	D-5		
C343	C-3	C372	D-3			R326	B-5	R355	D-5		

• **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor



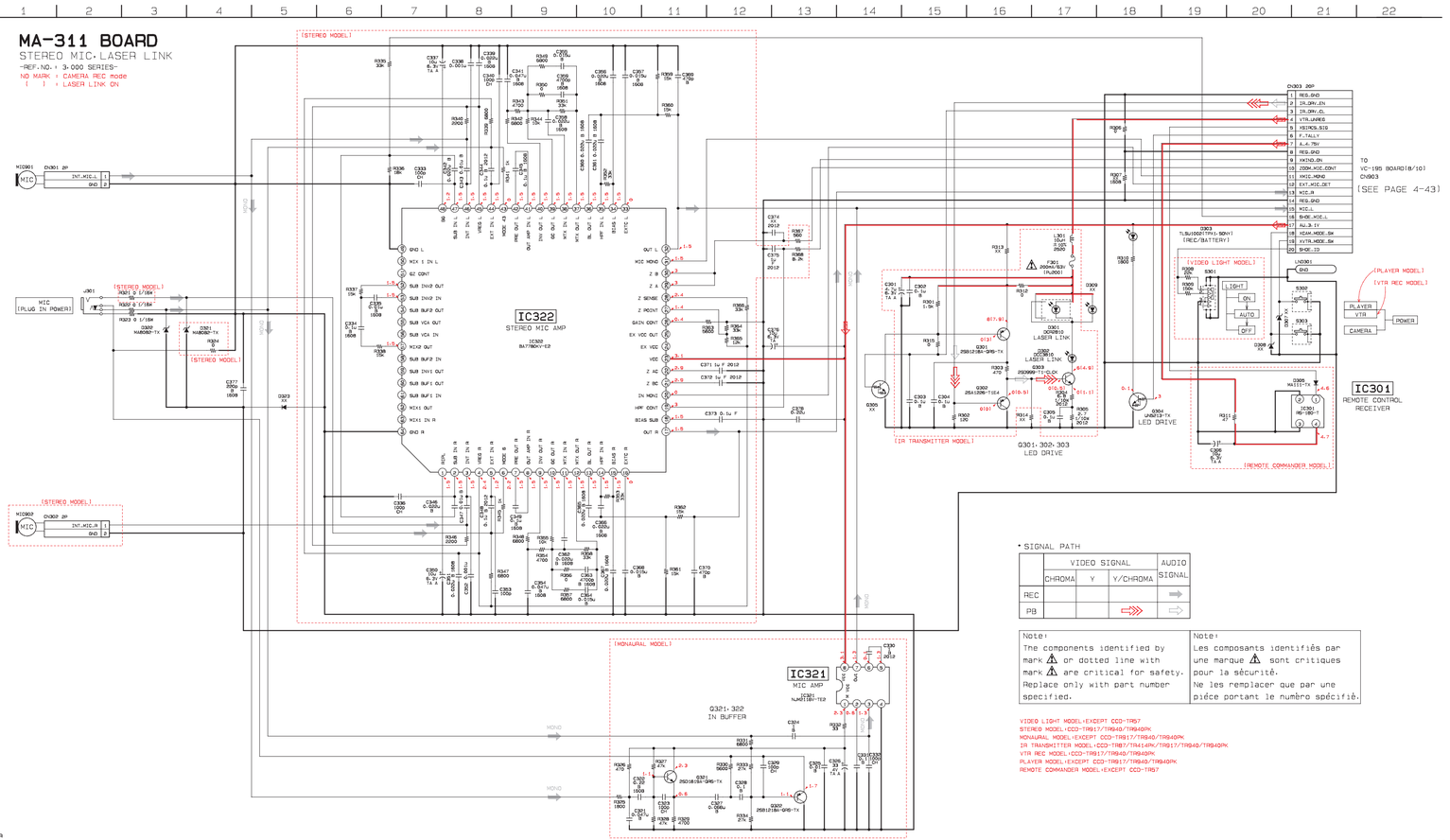
MA-311 BOARD

STEREO MIC, LASER LINK

-REF.NO. 3-000 SERIES-

NO MARK : CAMERA REC mode

( ) : LASER LINK ON



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				⇨
PB			⇨	⇨

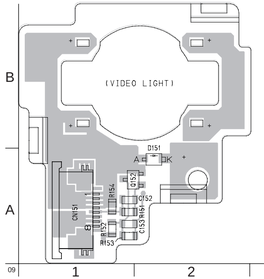
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

VIDEO LIGHT MODEL:EXCEPT CCD-TR57
STEREO MODEL:CCD-TR917/TR940/TR940PK
MONAURAL MODEL:EXCEPT CCD-TR917/TR940/TR940PK
IR TRANSMITTER MODEL:CCD-TR87/TR414PK/TR917/TR940/TR940PK
VTR REC MODEL:CCD-TR917/TR940/TR940PK
PLAYER MODEL:EXCEPT CCD-TR917/TR940/TR940PK
REMOTE COMMANDER MODEL:EXCEPT CCD-TR57

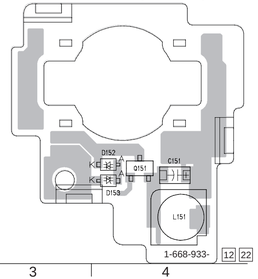
VL-16 (VIDEO LIGHT) PRINTED WIRING BOARD

– Ref No. VL-16 BOARD: 3,000 series –

VL-16 BOARD (SIDE B)



VL-16 BOARD (SIDE A)



VL-16 BOARD

C151	A-4
C152	A-1
C153	A-1
CN151	A-1
D151	A-2
D152	A-4
D153	A-4
L151	A-4
Q151	A-4
Q152	A-1
R151	A-1
R152	A-1
R153	A-1
R154	A-1

VL-16 BOARD (VIDEO LIGHT MODEL)

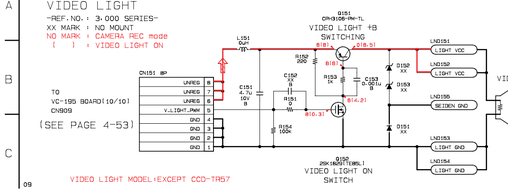
VIDEO LIGHT

-REF.NO. 3-000 SERIES-

XX MARK : NO MOUNT

NO MARK : CAMERA REC mode

( ) : VIDEO LIGHT ON

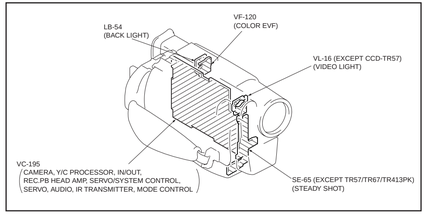


Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor



CF-49 BOARD

CONTROL

-REF.NO. : 3.000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

CF-49 BOARD CAMERA REC

1 — 2.9Vp-p — 24.48 kHz — IC001 (2)

CN001 50P

LCD..Y	1	LCD.Y
REG..GND	2	
LCD..U	3	LCD.U
REG..GND	4	
LCD..V	5	LCD.V
REG..GND	6	
LCD..HD	7	LCD.HD
LCD..VD	8	LCD.VD
XCS..EVF..D/A	9	XCS.EVF.D/A
XCS..LCD..DA	10	
REG..GND	11	
BK..EVF..Y	12	BK.EVF.Y
REG..GND	13	
SP..+/BEEP..SIG	14	
SP..-	15	
DIAL..A	16	
DIAL..B	17	
TALLY..LED	18	
XCS..LCD..DRIVER	19	XCS.LCD
LCD..COM/XDATA	20	COM/XDATA
KEY..AD7	21	
KEY..AD2	22	
KEY..AD3	23	
KEY..AD4	24	
KEY..AD5	25	
KEY..AD6	26	
D..3.1V	27	
XOSD..SCK	28	XOSD.SCK
OSD..SO	29	OSD.SO
FOCUS..A..AD	30	FOCUS.A
FOCUS..B..AD	31	FOCUS.B
XCAM..MODE..SX	32	
XVTR..MODE..SX	33	
LCD..LED..DR	34	
BATT..LI..3V	35	
CHARGE..LED..DR	36	
EVF..4.75V	37	EVF.4.75V
EVF..4.75V	38	
EVF..BL..GND	39	
VTR..UNREG	40	
EVF..BL..GND	41	
XVC..SCK	42	XVC.SCK
VC..SO	43	VC.SO
VC..SI	44	VC.SI
EVF..BL..4.75V	45	EVF.BL.4.75V
PANEL..HOLD	46	
A..4.75V	47	A.4.75V
EVF..13.5V	48	EVF.13.5V
VCO	49	VCO
EVF..VG	50	EVF.VG

TO VC-195 BOARD(10/10) CN911 (SEE PAGE 4-53)

Q001 XX XTALY.LED — R001 XX — D009 XX — Q002 XX — Q005 VTR UNREG SWITCH

Q005 2SA1362-YG-EL — R003 10K — R049 220K — Q003 2SD1816A-SPR-TX — R050 470K — R051 25K — R052 4700 — C003 0.1u 16 — (LCD BACKLIGHT MODEL)

Q003 LED 4B ON SWITCH

R011 680K — R012 0

IC001 LCD DRIVE IC001 BU8739K-E2

SG16 SG15 SG14 SG13 SG12 SG11 SG10 SG9 SG8 SG7 SG6 SG5 SG4 SG3 SG2 SG1 COM4 COM3 COM2 COM1 VCS VCO

S020 PROGRAM AE — R038 1500 — R034 1500 — R035 2000 — R045 3900 — R047 8200 — R048 27K

SEL/PUSH EXEC

START/STOP MODE — 5 SEC

S024

AD2 R009 10K — R013 1200 — PICTURE EFFECT — R022 1500 — MENU — R023 2200 — R039 3900 — TIME — R036 8200 — R039 27K

AD3(ESK) R006 10K — S001 XX

AD4 R007 10K — R015 1200 — R019 1500 — EXPOSURE — R025 2200 — BACK LIGHT — R031 3900 — R038 8200 — R041 27K — (EXPOSURE MODEL) — R053 0 1608 (WITHOUT EXPOSURE MODEL)

AD5 R008 10K — DATE — R016 1200 — R020 1500 — COUNTER RESET — R026 2200 — TITLE

AD6 R009 10K

S001 XX — S006 — S010 — S021 — S012 — S017 — S003 — S008 — S018

FADER — FAR — NEAR — RV001 20K/20K — S002 — FOCUS — INFINITY — MANUAL — AUTO

CN001 8P: 1 FADER, 2 REG..GND, 3 FOCUS..A, 4 FOCUS..B, 5 D..3.1V, 6 INFINITY, 7 AUTO, 8 REG..GND

CN002 8P: 1 FADER, 2 GND, 3 FOCUS..A, 4 FOCUS..B, 5 D..3.1V, 6 INFINITY, 7 AUTO, 8 GND

FOCUS.A, FOCUS.B, INFINITY, AUTO

(MANUAL FOCUS MODEL)

CONTROL SWITCH BLOCK(MF-8500)

* CONTROL SWITCH BLOCK(MF-8500) is replaced as a block, so that this PRINTED WIRING BOARD is omitted.

* SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	⇨	⇨	
PB	⇨	⇨	

LCD BACKLIGHT MODEL:CCD-TR917/TR940/TR940PK
EXPOSURE MODEL:CCD-TR917/TR940/TR940PK
WITHOUT EXPOSURE MODEL:EXCEPT CCD-TR917/TR940/TR940PK
MANUAL FOCUS MODEL:CCD-TR917/TR940/TR940PK

LND001 CH GND — LND002 CH GND

BZ001 — BZ002 XX

D012 XX — D003 XX — D004 XX — D007 XX

C001 XX — C002 XX — D005 MA8082-TX — D006 MA8082-TX — D008 MA111-TX — BH001 LITHIUM BATTERY HOLDER

CN007 20P: 1 EVF..BL..4.75V, 2 EVF..BL..GND, 3 EVF..BL..GND, 4 EVF..13.5V, 5 EVF..4.75/3.1V, 6 A..4.75V, 7 D..3.1V, 8 EVF..VD, 9 EVF..R-Y, 10 EVF..Y, 11 EVF..B-Y, 12 EVF..VD, 13 EVF..VG, 14 VCO, 15 EVF..GND, 16 EVF..GND, 17 VC..SI, 18 XVC..SCK, 19 VC..SO, 20 XCS..EVF..D/A

TO VF-120 BOARD CN5301 (SEE PAGE 4-76)

TO VF-119 BOARD CN5401 (SEE PAGE 4-72)

CN008 XX: 1 EVF..4.75V, 2 EVF..GND, 3 BK..EVF..Y, 4 XTALLY..LED

(LCD BACKLIGHT MODEL) R042 100 — R043 XX

CN009 24P: 24 BL..VDD, 23 BL..GND, 22 COM1, 21 COM2, 20 SEG2, 19 SEG3, 18 SEG4, 17 SEG5, 16 SEG6, 15 SEG7, 14 SEG8, 13 SEG9, 12 SEG10, 11 SEG11, 10 SEG12, 9 SEG13, 8 SEG14, 7 SEG1, 6 SEG16, 5 SEG15, 4 COM4, 3 COM3, 2 BL..VDD, 1 BL..GND

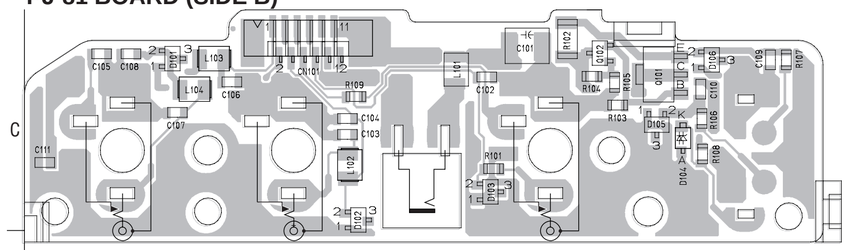
LCD903

R045 XX — R044 100 — (LCD BACKLIGHT MODEL)

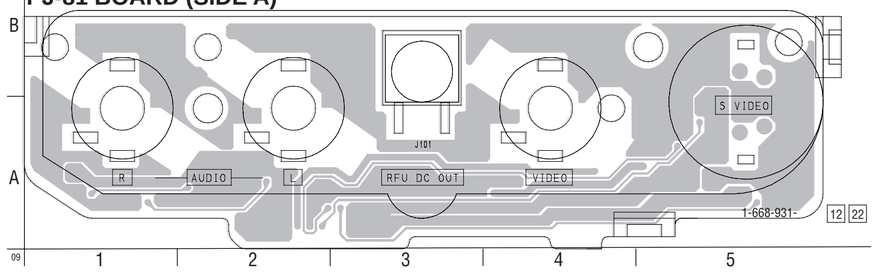
PJ-81 (AV IN/OUT) PRINTED WIRING BOARD

– Ref No. PJ-81 BOARD: 3,000 series –

PJ-81 BOARD (SIDE B)

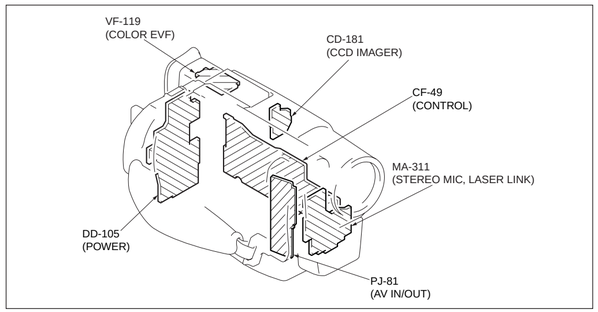


PJ-81 BOARD (SIDE A)



PJ-81 BOARD

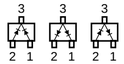
C101	C-4
C102	C-4
C103	C-3
C104	C-3
C105	C-1
C106	C-2
C107	C-1
C108	C-1
C109	C-5
C110	C-5
C111	C-1
CN101	C-2
D101	C-1
D102	C-3
D103	C-4
D105	C-5
D106	C-5
D107	C-5
J101	A-3
L101	C-3
L102	C-3
L103	C-2
L104	C-2
Q101	C-5
Q102	C-4
R101	C-4
R102	C-4
R103	C-4
R104	C-4
R105	C-4
R106	C-5
R107	C-5
R108	C-5
R109	C-3

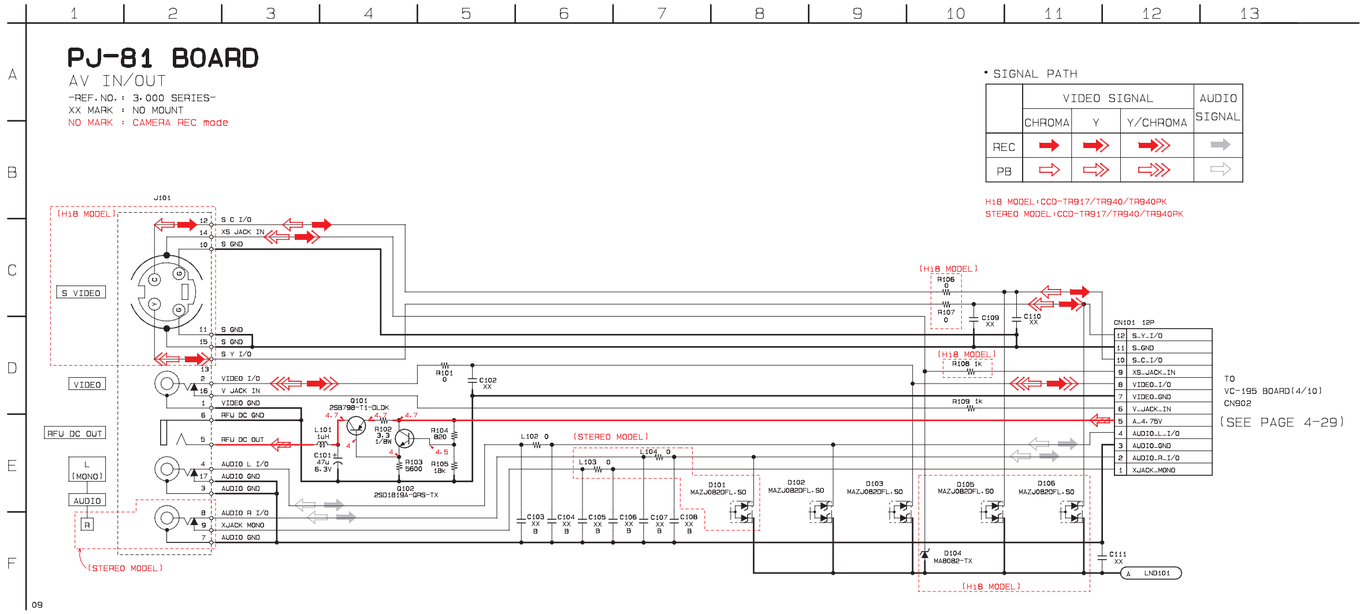


• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip diode

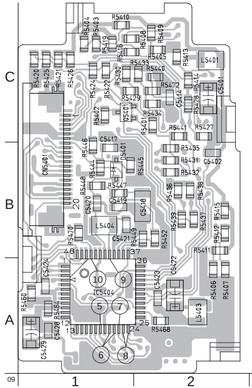




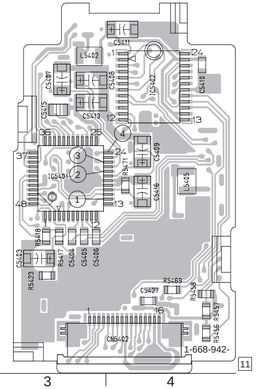
VF-119 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No. VF-119 BOARD: 10,000 series –

VF-119 BOARD (SIDE B)



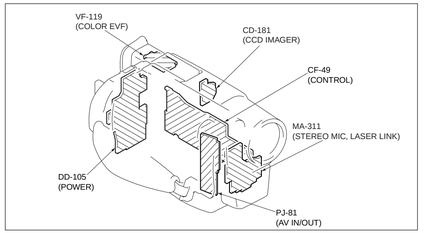
VF-119 BOARD (SIDE A)



- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

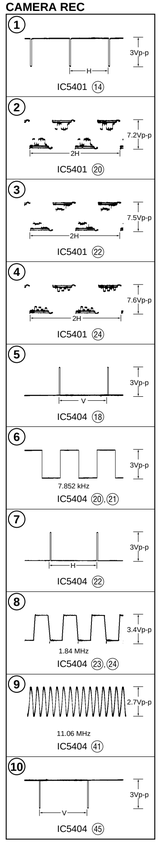
- Chip transistor



VC-119 BOARD

C5401	C-2	R5410	C-1
C5402	B-2	R5411	B-2
C5403	A-3	R5412	B-2
C5404	B-3	R5414	C-2
C5405	B-3	R5414	C-2
C5406	B-3	R5415	B-2
C5407	C-3	R5416	C-1
C5408	C-3	R5417	B-3
C5409	B-4	R5418	B-3
C5410	C-4	R5418	C-2
C5411	C-4	R5419	C-1
C5413	C-3	R5420	C-1
C5415	C-3	R5421	C-1
C5416	B-4	R5422	C-1
C5417	B-1	R5423	A-3
C5418	B-2	R5424	C-1
C5419	A-2	R5425	C-1
C5420	B-1	R5426	C-1
C5421	B-1	R5427	C-2
C5422	A-2	R5428	C-2
C5423	A-2	R5429	C-1
C5424	A-1	R5430	C-1
C5427	A-4	R5431	B-2
C5428	A-1	R5432	B-2
C5429	A-1	R5433	C-2
		R5434	C-2
CN5401	B-1	R5435	B-2
CN5402	A-4	R5436	B-2
		R5437	B-2
D5401	B-1	R5438	B-2
		R5439	B-2
IC5401	B-3	R5440	C-2
IC5402	C-4	R5441	C-2
IC5404	A-1	R5444	B-1
		R5445	B-1
L5401	C-2	R5446	B-1
L5402	C-3	R5447	B-1
L5403	A-2	R5448	B-1
L5404	B-1	R5449	B-2
L5405	B-4	R5452	B-2
		R5456	A-4
Q5401	C-1	R5457	A-4
		R5458	A-4
R5401	C-2	R5460	A-1
R5402	C-1	R5464	A-1
R5403	C-1	R5468	A-2
R5404	C-1	R5469	A-4
R5405	C-2	R5470	B-1
R5406	A-2	R5471	B-4
R5407	A-2	R5472	C-2
R5408	C-1		
R5409	C-2		

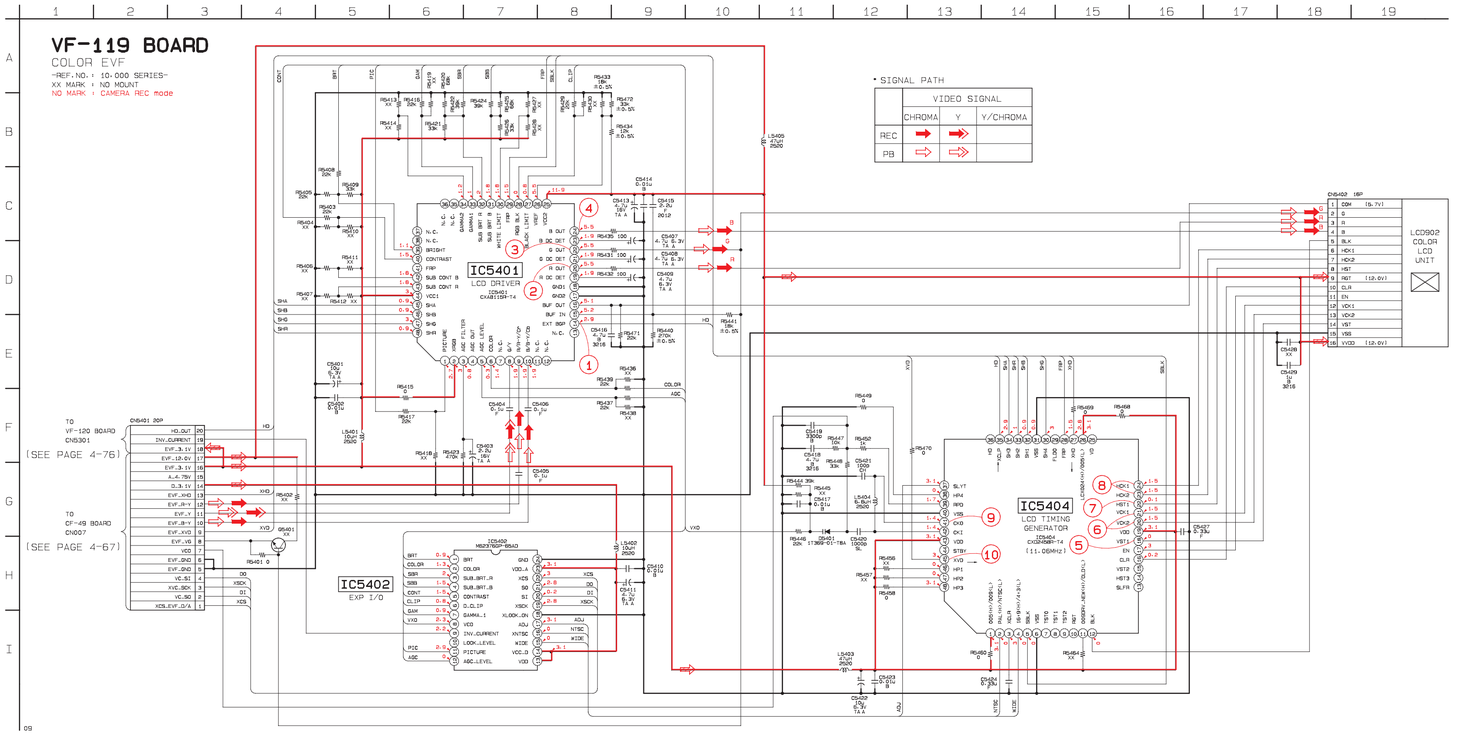
VF-119 BOARD CAMERA REC



VF-119 BOARD

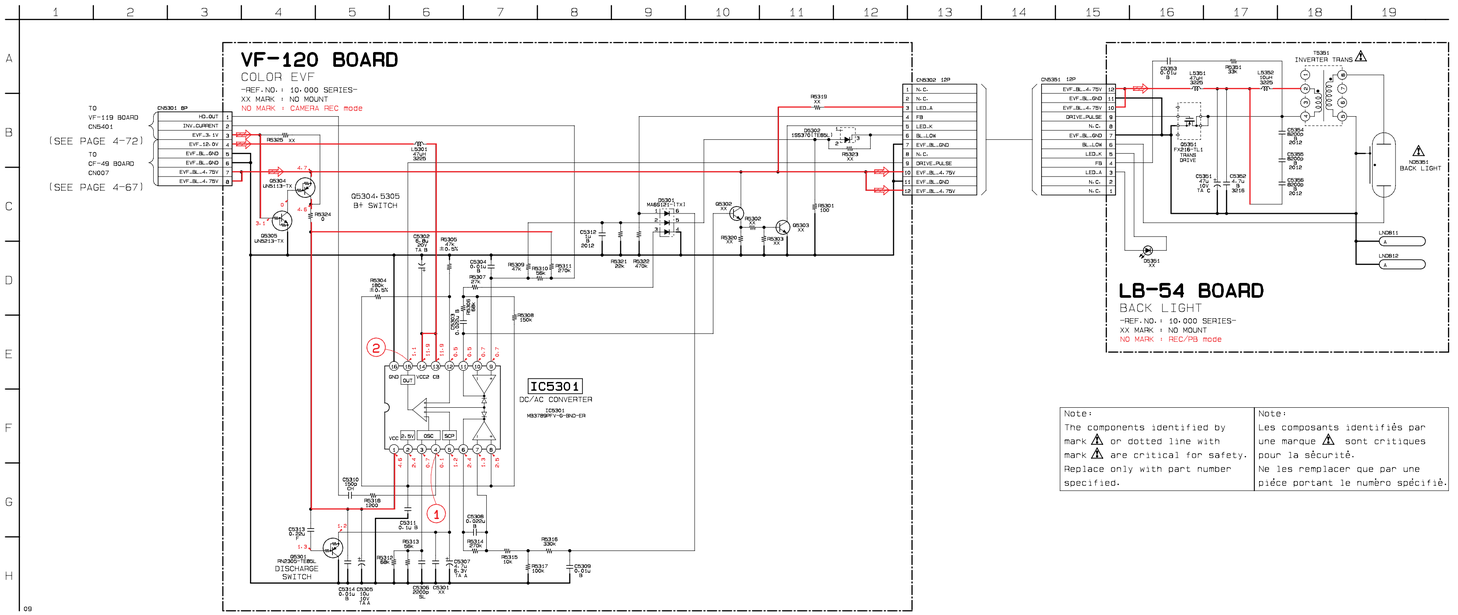
COLOR EVF

-REF.NO. : 10-000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode



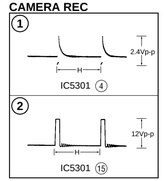
• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→	→	
PB	→	→	



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

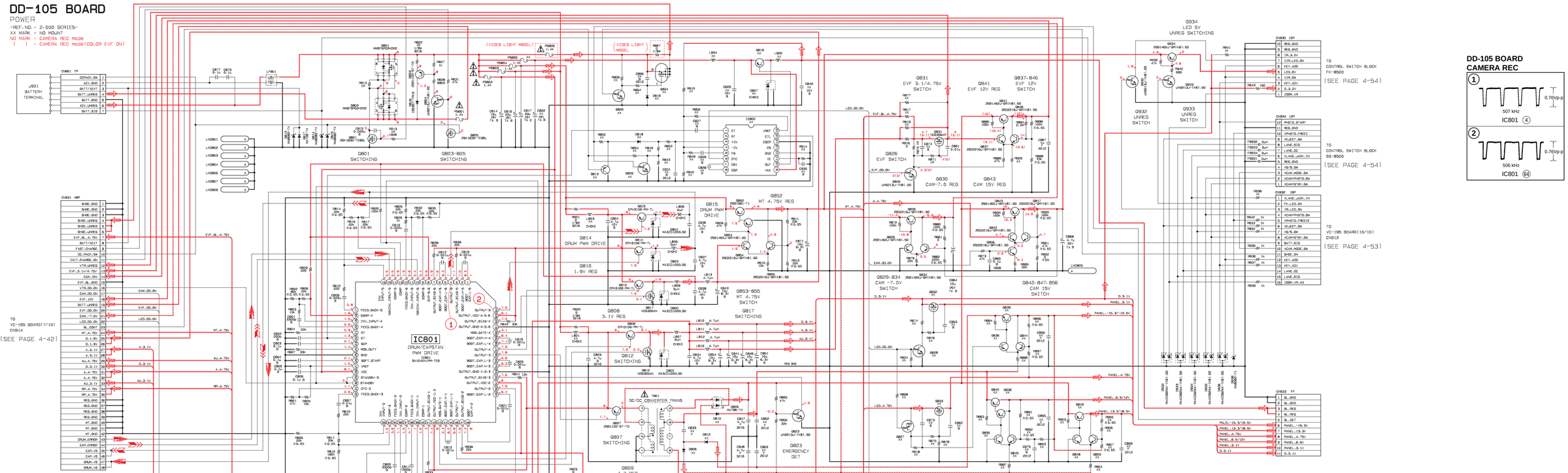
VF-120 BOARD
CAMERA REC



DD-105 BOARD

POWER

-REF.NO.: 2-000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
[ ] : CAMERA REC mode(COLOR EVF ON)



DD-105 BOARD CAMERA REC

• SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		→	
Capstan servo(speed and phase)		⇒	

• VIDEO LIGHT MODEL=EXCEPT CCD-TR57

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.